

IN THE UNITED STATES PATENT AND TRADE MARK OFFICE

In re application of

Noriaki HATTORI et al.

Confirmation No.: 8196

Application No.: 10/829, 250

Art Unit: 1652

Filed: April 22, 2004

Examiner: E. Slobodyansky

For: LUCIFERASE AND METHODS FOR MEASURING INTRACELLULAR ATP USING
THE SAME.

DECLARATION UNDER 37 C.F.R. § 1.132

Honorable Commissioner for Patents
Alexandria, VA 22313

Sir:

I, Dr. Noriaki Hattori, a citizen of Japan and residing at 1327-24 Yamazaki Noda city, Chiba pref., say and declare as follows:

1. I received the degree of Ph. D. from Showa University in Japan in 2004.

2. I have worked at Research and Development Division of Kikkoman Corporation from 1993 to 2008.

I have been studying about firefly luciferase, structure and function for 10 years. A copy of my Curriculum Vitae is attached.

3. I am one of the inventors in U.S. Serial Number 10/829,250 or a scientist in the field of biochemical research into firefly luciferase, and I am very familiar with the subject matter thereof. I have been researching the subject matter thereof since 1993. I have reviewed the

Office Action mailed January 11, 2008 in the application.

4. I have prepared the present alignment of sequences found in the appendix in support of patentability of the above-identified patent application.

5. I have prepared the present alignment by using software and sequence data as follows.

[GENETYX-MAC : Amino Acid Sequence Homology Data]

Unit Size to compare = 2

Pick up Location = 5

JS0181

Photinus-luciferin 4-monooxygenase (ATP-hydrolysing) (EC 1.13.12.7) [similarity] - Genji firefly gi|84744|pir||JS0181[84744]

REFERENCE 1 (residues 1 to 548)

AUTHORS Masuda,T., Tatsumi,H, and Nakano,E.

TITLE Cloning and sequence analysis of cDNA for luciferase of a Japanese firefly, *Luciola cruciata*

JOURNAL Gene 77 (2), 265-270 (1989)

6. To show that the disclosure of the specification of the above-identified application is applicable to a broad range of firefly luciferases, I have provided an alignment of sequence between the luciferase of the present invention and two other firefly luciferases known at the time of filing of the application. The alignments show that firefly luciferases are well conserved throughout their entire amino acid sequences, including in the region surrounding the glutamic acid in the 490th position in the HEIKE firefly.

7. In my opinion, as one of skill in the art of the biochemistry of firefly luciferases, Applicants have provided sufficient disclosure in the specification as filed to evidence that they

have in hand an invention of scope summarized by "a firefly luciferase" that retains activity in the presence of a surfactant due to mutation of an amino acid corresponding the 490th amino acid of a HEIKE firefly luciferase. My opinion is based upon the known and demonstrated conservation of firefly luciferase amino acid sequences, essentially throughout their length, and the demonstration in the examples of the specification of the above-identified application that mutation of the 490th amino acid of the HEIKE firefly luciferase confers resistance to surfactants.

8. The undersigned declares further that all statement made herein of his own knowledge are true and all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statement may jeopardize the validity of above identified application or any patent issuing thereon.

Date

Signature

June 12, 2008

Noriaki Hattori

Dr. Noriaki Hattori

Curriculum Vitae

Full Name: Noriaki Hattori

Present Address: 1327-24 Yamazaki Noda city, Chiba pref., Japan

Phone: 81-4-7125-2601

Nationality: Japanese

Birth: August 17, 1968

Sex: Male

Education:

April 1987-March 1991

Yamanashi University, [Faculty of Engineering]

April 1991-March 1993

Osaka Prefecture University, [Faculty of Agriculture]

Master of applied microbiology

Work Experience:

April 1993-Present Research and Development Division of Kikkoman Corporation

2008_05_09-09_48_25, ti

[GENETYX-MAC : Amino Acid Sequence Homology Data]

Date : 2003.10.03

1st Amino Acid Sequence

File Name : Luciola lateralis HLK.seq
Sequence Size : 548

2nd Amino Acid Sequence

File Name : Luciola mingrellica.seq
Sequence Size : 548

Unit Size to compare = 2
Pick up Location = 5

[81.0% / 547 aa]

INT/OPT. Score : < 1607/ 2298 >

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1' MENMNDNENIYVGPKPFYPIEEGSAGQLRKYMMDRYAKLGAIAFTNALTGVDYTYAEYLEKSCCLGEALKNYGLVVDGRIALCSENCEEF
   .*. .*. .*** ***** **,**, ,***** ,***** .*. .*. ,* .*,*,*,*, , , ,*****
1' MEMEKEENVVYGPLPFYPIEEGSAGIQLHKYMHQYAKLGAIAFSNALTGVDISYQEYFDITCLAEAMKNFGMKPEEHIALCSENCEEF

91' FIPVLAGLFIQVGVAPTNEIYTLRELHSLGISKPTIVFSSKKGLDKVITVQKTYMAIKTIVILDSKVDYRGYQSMDFIKKNTPPGFKG
   ***** .***. ***** ***** .***. .***. .***. .***. .***. .***. .***. .***. .***. .***. .***. .***. .***.
90' FIPVLAGLYIGVAVAPTNEIYTLRELHSLGIAQPTIVFSSRKGLPKVLEVQKTYTCIKKIVILDSKVNFGGHDCMETFIKKHVELGFQP

181' SSFKTVEV-NRKEQVALIMNSSGSTGLPKGVQLTHENLVTRFSHARDPIYGNQVSPGTAILTVVPFHHGFGMFTTLGYLTGCFRI VMLTK
   *** .*. .*. .***. .***. ***** ***** .***. .***. .***. .***. .***. .***. .***. .***. .***. .***.
180' SSFVPI DVKNRKQHVALLMNSSGSTGLPKGVRITHEGAVTRFSHAKDPIYGNQVSPGTAILTVVPFHHGFGMFTTLGYFACGYRVVMLTK

270' FDEETFLKTLQDYKCSSYILVPTLFAILNRSELDDKYDLSNLVEIASGGAPLSKEIGEAVARRFNLPQVRQGYGLTETTSAILITPEGDD
   **** *. .*****. ***** ,***. .*. .****. .*****. .*. .*****. *****. *****
270' FDEELFLRTLQDYKCTSVILVPTLFAILNKSELIDKFDLSNLTEIASGGAPLAKEVGEAVARRFNLPQVRQGYGLTETTSAILITPEGDD

360' KPGASGKVVPFLKAKVIDLDTKKTLGPNRRGEVCVKGPMLMKGYVDNPEATREIIDEGWLHTGDI GYYDEEKHFFIVDRLKSLIKYKG
   ***** .***** ***** .***. .***. .***. .***. .***. .***. .***. .***. .***. .***. .***. .***.
360' KPGASGKVVPFLFKYVIDLDTKKTLGYNRRGEICVKGPSLMLGYSNNPEATREIIDEGWLHTGDI GYYDEEKHFFIVDRLKSLIKYKG

450' QVPPAELESVLLQHPNIFDAGVAGVPDP IAGELPGAVVVLCKKKSMTKEVMDYVAGQVSNAKRLRGVRFVDEVPKGLTGKIDGKAIRE
   ***** ***** ***** .***. .***. .***. .***. .***. .***. .***. .***. .***. .***. .***. .***.
450' QVPPAELESVLLQHPNIFDAGVAGVPDP IAGELPGAVVVLCKKKTMTKEIVDYVNSQVNVNKRRLRGVRFVDEVPKGLTGKIDAKVIRE

540' ILKKPYAKM
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540' ILKKPQAKM
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